

ABSTRACT

There is provided a solid-state imaging device capable of achieving both of a wide dynamic range and a high low-illuminance sensitivity. A photodiode and a first transistor are provided in series between the ground and a drain of each of pixels, and a signal corresponding to a current or electric charge generated in the photodiode in accordance with an optical input is outputted from a detection node located between the photodiode and the first transistor. A control part executes control to alternately repeat a logarithmic operation period during which a photoelectric conversion signal logarithmically converted by setting a gate voltage ϕ_R of the first transistor to a first level is obtained and a linear operation period during which a linear type photoelectric conversion signal is obtained by setting the gate voltage ϕ_R of the first transistor to a second level.

(12)特許協力条約に基づいて公開された国際出願

10/540761

(19)世界知的所有権機関
国際事務局(43)国際公開日
2004年7月22日 (22.07.2004)

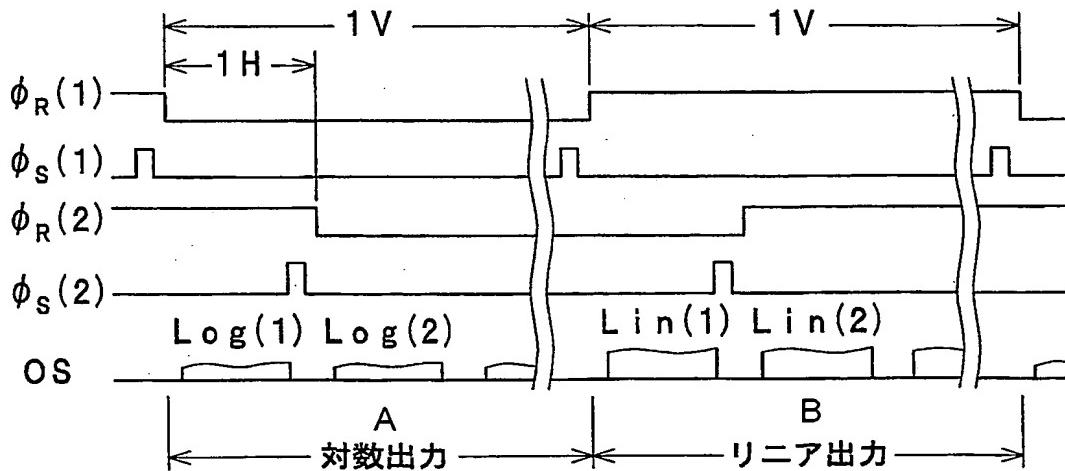
PCT

(10)国際公開番号
WO 2004/062274 A1

- (51) 国際特許分類: H04N 5/335
 (21) 国際出願番号: PCT/JP2003/016550
 (22) 国際出願日: 2003年12月24日 (24.12.2003)
 (25) 国際出願の言語: 日本語
 (26) 国際公開の言語: 日本語
 (30) 優先権データ:
 特願 2002-379240
 2002年12月27日 (27.12.2002) JP
 (71) 出願人(米国を除く全ての指定国について): シャープ
 株式会社 (SHARP KABUSHIKI KAISHA) [JP/JP]; 〒
 545-8522 大阪府 大阪市 阿倍野区長池町22番22号
 Osaka (JP).
 (72) 発明者; および
 (75) 発明者/出願人(米国についてのみ): 渡辺 恒志
 (54) Title: SOLID-STATE IMAGING DEVICE
 (54) 発明の名称: 固体撮像装置

(WATANABE,Takashi) [JP/JP]; 〒619-1127 京都府 相
楽郡 加茂町南加茂台12-7-14 Kyoto (JP).(74) 代理人: 河宮治, 外 (KAWAMIYA,Osamu et al.); 〒
540-0001 大阪府 大阪市 中央区城見1丁目3番7号
IMPビル青山特許事務所 Osaka (JP).

(81) 指定国(国内): CN, KR, US.

(84) 指定国(広域): ヨーロッパ特許(AT, BE, BG, CH, CY,
CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC,
NL, PT, RO, SE, SI, SK, TR).添付公開書類:
— 國際調査報告書2文字コード及び他の略語については、定期発行される
各PCTガゼットの巻頭に掲載されている「コードと略語
のガイドスノート」を参照。

A...LOGARITHMIC OUTPUT

B...LINEAR OUTPUT

WO 2004/062274 A1

(57) Abstract: A solid-state imaging device capable of concurrently attaining a wide dynamic range and a high low-illuminance sensitivity. A photo-diode and a first transistor are provided in series between the ground and the drain, and a signal corresponding to a current or charge generated in the photo-diode according to a light input is output from a detection node between the photo-diode and the first transistor. A control unit performs the control of alternately repeating a logarithmic operation duration for setting the gate potential Φ_R of the first transistor to a first level to obtain a logarithm-converted photoelectric conversion signal and a linear operation duration for setting the gate potential Φ_R of the first transistor to a second level to obtain a linear photoelectric conversion signal.

[続葉有]